

STATUS AND DIVERSITY OF FISH FAUNA IN DIBRU-SAIKHOWA NATIONAL PARK, ASSAM¹A. WAKID^{2,3} AND S.P. BISWAS^{2,4}¹Accepted September, 2003²Department of Life Sciences, Dibrugarh University, Dibrugarh 786 004, Assam, India.³Email: wakid@rediffmail.com⁴Email: spbsdu@yahoo.com

Fish species from various aquatic bodies of Dibru-Saikhowa National Park were collected and identified during the study period 2000-2002. Altogether 76 species of fish from 24 families and 49 genera, including 7 endangered species were recorded from the study area. The status and abundance of all these recorded species are discussed, with the natural and anthropogenic pressures that they are facing.

Key words: Fish fauna, status, abundance, protected area, Dibru-Saikhowa National Park, endangered, anthropogenic pressures

INTRODUCTION

Northeast India comprises seven states namely Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura, each with vast and varied water resources in the form of rivers (19,150 km), reservoirs (23,792 ha), beels, lakes and swamps (1,43,740 ha), ponds and mini-barrages (40,808 ha), and low-lying paddy-cum-fish culture systems (2,780 ha) (Mahanta *et al.* 2001). The region is considered one of the hotspots of freshwater fish biodiversity of the world (Kottelat and Whitten 1996). There are two major drainage systems in this area – River Brahmaputra in the northern region, and River Barak in the southern region. Besides these two rivers, the Chindwin drainage system also feeds the eastern region. With its 267 fish species, northeast India contributes about 33.13% of the total freshwater fishes of India (Sen 2000). Among its seven states, Assam has the largest number of fishes with 200 species (Mahanta *et al.* 2001).

A number of workers have studied the fishes of Assam (Motwani *et al.* 1962; Yadava and Chandra 1994; Biswas 1998; Sarkar and Ponniah 2000; Biswas and Boruah 2000; Boruah and Biswas 2002; Bhattacharjya *et al.* 2001). However, few reports are available on the fishes of protected areas of Assam (Sen and Choudhury 1977; Biswas *et al.* 1996; Dutta *et al.* 1998; Wakid and Biswas 2001). Due to this paucity of information, and to begin the evaluation of the diversity and status of fish fauna in the protected areas of Assam, an attempt has been made to investigate the fish fauna of Dibru-Saikhowa National Park.

STUDY AREA

Dibru-Saikhowa is the easternmost National Park of Assam, with an area of 340 sq. km, extending from 27° 35' to

27° 45' N and 95° 10' to 95° 40' E in Tinsukia and Dibrugarh districts. This whole area, which is now becoming a river island, is flanked by River Brahmaputra on the northern side and River Lohit on the southern, eastern and western sides. However, the conversion of Dibru-Saikhowa National Park into a river island is of recent origin (since 2000). The geomorphological change has resulted from the widening of Dangori and Dibru rivers and shifting of the course of the Lohit river (Sarma and Phukan 2003).

The entire area is flat terrain comprising the flood plain of the Brahmaputra and Lohit rivers. It has a subtropical climate with an annual rainfall of 2,300-2,800 mm. The elevation averages 118 m above msl, with a variation of 110-126 m. There are large numbers of perennial streams (namely Paropara jan, Salbeel nallah, Dodhiajan, Laikajan, Ajuka, etc.) and seasonal streams (namely Garamjan, Erasuti, etc.). Perennial as well as seasonal wetlands and marshes (namely Tarali, Salbeel, Burhi beel, Hatighuli, Nagapather, etc.), also criss-cross the entire National Park (Wakid 2004).

MATERIAL AND METHODS

The present study was conducted in Dibru-Saikhowa National Park during June 2000 to June 2002, mainly in the pre-monsoon, post-monsoon and winter seasons. Topographical maps of the Survey of India (scale 1:50,000) were used to trace the water bodies of the area, and fish specimens were collected from the identified water bodies with the help of cast net, scoop net and gill net. Efforts were made to avoid statistical bias. Samples were preserved in 10% formalin and brought to the laboratory for identification and further studies. Identifications were made with the help of Jayaram (1981, 1999); Dutta Munshi and Shrivastava (1988) and Talwar and Jhingran (1991). Anon. (1998) was followed to determine their global status.

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Table 1: Diversity, abundance and status of fish fauna in Dibru-Saikhowa National Park

Scientific Name	Abundance	IUCN status
Family: Notopteridae		
1. <i>Notopterus notopterus</i> (Pallas)	+	LRnt
2. <i>Chitala chitala</i> (Ham. - Buch.)	++	EN
Family: Anguillidae		
3. <i>Anguilla bengalensis bengalensis</i> (Gray & Hardwicke)	+	EN
Family: Clupeidae		
4. <i>Gudusia chapra</i> (Ham. - Buch.)	++	LRlc
5. <i>Hilsa (Tenuulosa) ilisha</i> (Ham. - Buch.)	+	VU
Family: Cyprinidae		
6. <i>Amblypharyngodon mola</i> (Ham. - Buch.)	+++	LRlc
7. <i>Aspidoparia jaya</i> (Ham. - Buch.)	+++	VU
8. <i>A. morar</i> (Ham. - Buch.)	+++	LRnt
9. <i>Barilius barila</i> (Ham. - Buch.)	++	LRnt
10. <i>B. barna</i> (Ham. - Buch.)	+	LRnt
11. <i>B. bendelisis</i> (Ham. - Buch.)	+	LRnt
12. <i>Bengana</i> (formerly <i>Rasbora</i>) <i>elenga</i> (Ham. - Buch.)	++	NA
13. <i>Catla catla</i> (Ham. - Buch.)	+++	VU
14. <i>Chela cachius (atpar)</i> (Ham. - Buch.)	+++	NA
15. <i>C. laubuca</i> (Ham. - Buch.)	++	LRlc
16. <i>Cirrhinus mrigala</i> (Ham. - Buch.)	+++	LRnt
17. <i>C. reba</i> (Ham. - Buch.)	++	VU
18. <i>Crossocheilus latius latius</i> (Ham. - Buch.)	+++	DD
19. <i>Danio dangila</i> (Ham. - Buch.)	++	NA
20. <i>Esomus danricus</i> (Ham. - Buch.)	+++	LRlc
21. <i>Labeo angra</i> (Ham. - Buch.)	++	LRnt
22. <i>L. bata</i> (Ham. - Buch.)	+++	LRnt
23. <i>L. boga</i> (Ham. - Buch.)	++	LRnt
24. <i>L. calbasu</i> (Ham. - Buch.)	+++	LRnt
25. <i>L. gonius</i> (Ham. - Buch.)	+++	LRnt
26. <i>L. pangusia</i> (Ham. - Buch.)	++	LRnt
27. <i>L. rohita</i> (Ham. - Buch.)	++	LRnt
28. <i>Rasbora daniconius</i> (Ham. - Buch.)	+++	LRnt
29. <i>Puntius conchonius</i> (Ham. - Buch.)	+++	VU
30. <i>P. sarana sarana</i> (Ham. - Buch.)	++	VU
31. <i>P. sophore</i> (Ham. - Buch.)	+++	LRnt
32. <i>P. ticto</i> (Ham. - Buch.)	+++	LRnt
33. <i>Tor putitora</i> (Ham. - Buch.)	++	EN
Family: Balitoridae		
34. <i>Acanthocobitis (= Nemacheilus) botia</i> (Ham.- Buch.)	++	LRnt
Family: Cobitidae		
35. <i>Botia dario</i> (Ham.- Buch.)	+	NA
36. <i>B. rostrata</i> Gunther	+	NA
Family: Bagridae		
37. <i>Aorichthys aor</i> (Ham.- Buch.)	+++	NA
38. <i>Mystus bleekeri</i> (Day)	+++	VU
39. <i>M. cavasius</i> (Ham. - Buch.)	+++	LRnt
40. <i>M. tengara</i> (Ham.- Buch.)	+++	NA
41. <i>M. vittatus</i> (Bloch)	+++	VU
42. <i>Rita rita</i> (Ham. - Buch.)	+	LRnt
Family: Siluridae		
43. <i>Ompok bimaculatus</i> (Bloch)	++	EN
44. <i>O. pabda</i> (Ham. - Buch.)	++	EN
45. <i>O. pabo</i> (Ham. - Buch.)	++	NA
46. <i>Wallago attu</i> (Bloch & Schneider)	+++	LRnt

Table 1: Diversity, abundance and status of fish fauna in Dibru-Saikhowa National Park (contd.)

Scientific Name	Abundance	IUCN status
Family: Schilbeidae		
47. <i>Ailia coila</i> (Ham. - Buch.)	++	VU
48. <i>Clupisoma garua</i> (Ham. - Buch.)	++	VU
49. <i>Eutropiichthys vacha</i> (Ham. - Buch.)	++	EN
50. <i>Silonia silondia</i> (Ham. - Buch.)	++	LRnt
Family: Pangasiidae		
51. <i>Pangasius pangasius</i> (Ham. - Buch.)	+	CR
Family: Sisoridae		
52. <i>Bagarius bagarius</i> (Ham. - Buch.)	+++	VU
53. <i>Sisor rhabdophorus</i> Ham. - Buch.	+	EN
Family: Claridae		
54. <i>Clarias batrachus</i> (Linn.)	+++	VU
Family: Heteropneustidae		
55. <i>Heteropneustes fossilis</i> (Bloch)	+++	VU
Family: Chacidae		
56. <i>Chaca chaca</i> (Ham. - Buch.)	++	NA
Family: Belonidae		
57. <i>Xenentodon cancila</i> (Ham. - Buch.)	+++	LRnt
Family: Symbranchidae		
58. <i>Monopterus cuchia</i> (Ham. - Buch.)	++	LRnt
Family: Chandidae		
59. <i>Chanda nama</i> Ham. - Buch.	+++	NA
Family: Nandidae		
60. <i>Badis badis</i> (Ham. - Buch.)	+	NA
61. <i>Nandus nandus</i> (Ham. - Buch.)	+	LRnt
Family: Gobiidae		
62. <i>Glossogobius giuris</i> (Ham. - Buch.)	++	LRnt
Family: Anabantidae		
63. <i>Anabas testudineus</i> (Bloch)	+	VU
Family: Belontiidae		
64. <i>Colisa fasciatus</i> (Schneider)	+++	LRnt
65. <i>C. lalia</i> (Ham. - Buch.)	++	NA
66. <i>C. sota</i> (Ham. - Buch.)	+++	NA
Family: Channidae		
67. <i>Channa barca</i> (Ham. - Buch.)	+++	NA
68. <i>C. stewarti</i> (Playfair)	++	NA
69. <i>C. marulius</i> (Ham. - Buch.)	+++	LRnt
70. <i>C. punctatus</i> (Bloch)	+++	LRnt
71. <i>C. striata</i> (Bloch)	+++	LRlc
72. <i>C. orientalis (gachua)</i> (Schneider)	++	VU
Family: Mastacembelidae		
73. <i>Mastacembelus armatus</i> (Lacepede)	+++	NA
74. <i>Macrogathus aral</i> (Bloch)	+++	LRnt
75. <i>M. pancalus</i> Ham. - Buch.	+++	LRnt
Family: Tetraodontidae		
76. <i>Tetraodon cutcutia</i> (Ham. - Buch.)	+++	LRnt

CR: Critically Endangered, EN: Endangered, LRnt: Low Risk near threatened, LRlc: Low Risk least concern, VU: Vulnerable, DD: Data Deficient, NA: Not Assessed, +: Rare, ++: Occasional, +++: Common

RESULTS AND DISCUSSION

From all the water bodies of Dibru-Saikhowa National Park, a total of 76 species of fish were collected and identified

(Table 1). These species represent 24 families and 49 genera, of which Family Cyprinidae ranks highest with 28 species. Among the genera, the most abundant was *Labeo* with seven species. According to the status given by IUCN, the species

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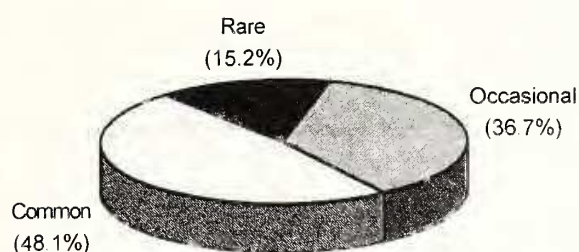


Fig. 1: Relative abundance of fish fauna in Dibru-Saikhowa National Park

we recorded include one critically endangered (CR), seven endangered (EN), thirty-one Lower Risk-near threatened (LRnt), five Lower Risk-least concern (LRlc), fifteen vulnerable (VU), one data deficient (DD), while sixteen species were not assessed (NA) (Table 2). The endangered and critically endangered species recorded are shown in Table 3. From the estimation of relative abundance, 13 species were categorized as rare, 27 as occasional and 36 species as common (Fig. 1).

The water bodies of the Park have been facing both natural and anthropogenic pressure. Among the natural pressures, the main one is the high rate of siltation caused by

the frequent floods of River Brahmaputra and River Lohit. The impact of flooding caused by the Lohit at the Park is much greater than that of the Brahmaputra. Due to deforestation in its catchment areas, Lohit carries an enormous silt load during every flood, which gets deposited on the floor of the wetlands. This results in eutrophication in most of the wetlands of Dibru-Saikhowa National Park, notably Raidang beel. The shrinkage of habitat has a tremendous effect on the abundance of many species like *Botia dario*, *Nandus nandus*, *Anabas testudineus* from this National Park.

Among the anthropogenic pressures, fishing is the greatest threat to the Park. There are more than 36 fringe villages and two forest villages in this National Park and majority of the villagers are dependent on fishing in and around the waterbodies of the Park for their livelihood. This dependence is increasing day by day due to rapid population growth as well as loss of agricultural land due to erosion and siltation by frequent floods. This leads to illegal practices such as fishing with monofilament gill-nets and fish poisons, increased fishing intensity, and fishing in the core area of the Park, which are becoming major threats to the fish fauna of the Park.

Table 2: The status and diversity of the recorded fish species from the Dibru-Saikhowa National Park

Sl. No.	Family	Status of Family							Total
		CR	EN	LRnt	LRlc	VU	DD	NA	
1.	Notopteridae	—	1	1	—	—	—	—	2
2.	Anguillidae	—	1	—	—	—	—	—	1
3.	Clupeidae	—	—	—	1	1	—	—	2
4.	Cyprinidae	—	1	15	3	5	1	3	28
5.	Balitoridae	—	—	1	—	—	—	—	1
6.	Cobitidae	—	—	—	—	—	—	2	2
7.	Bagridae	—	—	2	—	2	—	2	6
8.	Siluridae	—	2	1	—	—	—	1	4
9.	Schilbeidae	—	1	1	—	2	—	—	4
10.	Pangasiidae	1	—	—	—	—	—	—	1
11.	Sisoridae	—	1	—	—	1	—	—	2
12.	Claridae	—	—	—	—	1	—	—	1
13.	Heteropneustidae	—	—	—	—	1	—	—	1
14.	Chacidae	—	—	—	—	—	—	1	1
15.	Belonidae	—	—	1	—	—	—	—	1
16.	Symbranchidae	—	—	1	—	—	—	—	1
17.	Chandidae	—	—	—	—	—	—	1	1
18.	Nandidae	—	—	1	—	—	—	1	2
19.	Gobiidae	—	—	1	—	—	—	—	1
20.	Anabantidae	—	—	—	—	1	—	—	1
21.	Belontiidae	—	—	1	—	—	—	2	3
22.	Channidae	—	—	2	1	1	—	2	6
23.	Mastacembelidae	—	—	2	—	—	—	1	3
24.	Tetodontidae	—	—	1	—	—	—	—	1
Total		1	7	31	5	15	1	16	76

CR: Critically Endangered, EN: Endangered, LRnt: Low Risk near threatened, LRlc: Low Risk least concern, VU: Vulnerable, DD: Data Deficient, NA: Not Assessed

Table 3: List of Critically Endangered and Endangered fish species from Dibru-Saikhowa National Park

No.	Name of species	Abundance
1.	<i>Pangasius pangasius</i> (Ham-Buch.)	+
2.	<i>Chitala chitala</i> (Ham.)	++
3.	<i>Anguilla bengalensis</i> (Gray)	+
4.	<i>Tor putitora</i> (Ham-Buch.)	++
5.	<i>Ompok bimaculatus</i> (Bloch)	++
6.	<i>O. pabda</i> (Ham-Buch.)	++
7.	<i>Eutropichthys vacha</i> (Ham-Buch.)	++
8.	<i>Sisor rhabdophorus</i> (Ham-Buch.)	+

CONCLUSION

Besides the fish fauna, there are some other important species in the Dibru-Saikhowa National Park, which are totally piscivorous. Among them, the most prominent is the freshwater dolphin (*Platanista gangetica*). Wakid and Biswas (2002) have reported a residential population of *P. gangetica*

from this National Park, probably the densest and only resident dolphin population in the entire Upper Brahmaputra basin. This dolphin population is under threat from extensive fishing, which affects the whole aquatic environment in the area. Therefore, conservation of fish fauna in this National Park is essential not only to sustain the fish diversity, but also the entire aquatic ecosystem. Proper implementation of the Indian Fisheries Act, and incentives for sustainable utilisation of the aquatic bodies (Biswas and Boruah 2000) will improve the present status of the fish fauna of Dibru-Saikhowa National Park.

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